

## **Hydrological and Geochemical Assessment of Landfill Cap and Drainage Performance at Lawrence Livermore National Laboratory Site 300, Coast Ranges, California**

Michael J. Taffet, Lawrence Livermore National Laboratory

During 1992, Lawrence Livermore National Laboratory (LLNL) installed an 8-ft-thick RCRA cap and upgradient interfacial flow diversion system at Site 300 landfill pit 7. Pit 7 contains gravel contaminated with tritium, uranium, and metals from explosives testing. When open, pit 7 was a locus for ground water recharge. In fact, recharge at pit 7 caused local ground water to rise into adjacent landfill pits 3 and 5, liberating tritium and uranium to ground water. In the wake of several years of rainfall of varying intensity, we have monitored the changes in water level response resulting from closure construction. In this paper we describe: 1) the geographical shift of the recharge locus, 2) changes in ground water recharge volumes and ground water elevations relative to the landfill bottoms, and 3) ground water chemical changes. Our observations suggest that additional construction is necessary to isolate contents of the landfills from infiltrating water. On the basis of our experiences at pit 7, LLNL is eager to apply innovative approaches to other Site 300 landfills that may require remedial action to prevent water contact.

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